

Examining Dyke Marsh restoration options: A teacher-scientist partnership in the National Capital Region

By Cathlyn Stylinski, Ph.D.

IT IS HOT AND HUMID at Dyke Marsh, the largest freshwater tidal wetland in metropolitan Washington, D.C., and a part of the George Washington Memorial Parkway, Virginia. A four-person research team slogs through the sucking mud and dense, tangled stands of cattails, impatiens, and morning glories. Their goal? To lay out a long transect and record plant species in several 1-meter plots. They locate each plot with a GPS unit and push short PVC tubes into the ground to collect samples of seeds stored in the black ooze. The research team is surveying the vegetation to examine restoration options for the marsh, which has been diminished by dredging and eroded shorelines.



Teacher fellow Darren Wilburn consults with researcher Steve Seagle on the identity of a wetland plant. Together with another teacher fellow (Mike Allred) and researcher (Katia Engelhardt), they are inventorying plants and seeds. The data they collect will help researchers develop a restoration plan for the marsh.

The group works well together, which might seem ordinary but for the fact that this is not a typical research team. Drs. Katia Engelhardt and Steven Seagle are seasoned scientists from the University of Maryland Center for Environmental Science–Appalachian Laboratory. Rounding out the team are two secondary school teachers from Maryland, who just a few weeks earlier did not know a spatterdock from an arrow arum and never considered that the seed bank is part of the vegetation community. What brought them together was an outreach program funded by the Urban Ecology Research Learning Alliance, the learning center of the NPS National Capital Region. Teacher fellows spend their summer working beside researchers and developing related classroom extensions of their experience. The program provides valuable support to NPS resource management projects while deepening the teachers' understanding of science research and critical natural resources like Dyke Marsh.

"I have a better understanding of how scientists do their job," says Mike Allred, a high school science teacher. "I learned that an incredible amount of work has to be done before setting foot in the field." Middle

school teacher Darren Wilburn adds, "I always thought of researchers as professors in white coats who had all the answers. But now I see that they're always learning and that they may not know the answers, but they know how to search for them."

"I've never worked with such highly motivated people," says Dr. Engelhardt. "The teachers quickly picked up on the project's goals and tasks and brought in their own creativity. It's truly a collaborative effort." Dr. Seagle agrees. "We couldn't have gathered as much data without their help."

With these data, the team is mapping the distribution of plant species at Dyke Marsh and exploring the effect of elevation and distance to tidal creeks on vegetation communities and seeds stored in the soil. This critical information will help determine whether marsh restoration efforts require intensive planting or if native plants will naturally recolonize from the seed bank.

Despite the oppressive summer conditions and scathing rice-cutgrass, the team is enthusiastic and excited about their work. "Dyke Marsh is such a valuable resource," says Mr. Allred. "It's so close to D.C., but lots of people don't know it exists." "Many people have a misconception that it's a mosquito breeding ground, so we should get rid of it," notes Mr. Wilburn. "But it's beautiful and so lush."

As part of their fellowship, the teachers are developing inquiry-based classroom applications that build on their National Park Service research experience. In Mr. Allred's classroom activity, students experiment with different factors that limit growth of hydrilla, an exotic, submerged plant that is invading many wetlands, including parts of Dyke Marsh. Mr. Wilburn is applying his new expertise in wetland ecology to bogs and fens in western Maryland. His students will use some of the same sampling techniques he learned at Dyke Marsh.

These teachers will also share their experience and activities with other educators online, in informal discussions, and at regional conferences. This successful outreach program of the Urban Ecology Research Learning Alliance and the University of Maryland Center for Environmental Science–Appalachian Laboratory will continue in summer 2004 with new teacher participants. ■

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